

## Remarks

### Status of the Claims

Claims 1-18 and 22-34 are pending in the application. Claims 19-21 have been withdrawn from present consideration, without prejudice to Applicant's ability to pursue the claims in another patent application. Claims 1-18 and 22-34 stand rejected under 35 USC §103(a) as being anticipated by Lee et al. (US Pat. No. 6,905,586) (hereinafter "Lee") in view of Flory (U.S. Patent No. 2004/0144658) (hereinafter "Flory").

### Discussion

Reconsideration of the rejection is requested. It is submitted that the presently claimed invention is not made obvious by the cited references because neither reference teaches or makes obvious of the steps as recited in claims 1 and 22 of:

"centering a fixed bias voltage across a pair of nano-electrodes separated by a channel there between, the bias voltage corresponding to an energy difference between any two internal energy levels of a molecule of interest"; or  
"modulating the bias voltage with a modulation waveform"

Flory does not teach any sort of modulation, let alone modulation of the fixed bias voltage with a modulation waveform. Flory's ramping potential of paragraph 33 is not a modulation of a bias voltage level, let alone a modulation with a modulation waveform but is rather a simple changing of the voltage level over time, without providing specifics of that change. This viewpoint is further supported in paragraph 49 where it is stated:

"The general idea employed in the present invention is to ramp the tunneling voltage across the electrodes over the energy spectrum of the trans-locating biopolymer 5. As shown in Fig. 5 at specific voltages the incident energy will sequentially match the internal nucleotide energy levels giving rise to enormous increases in tunneling current....Thus, the constraint placed upon the applied tunneling voltage frequency is that it be something in excess of 10 MHz."

Thus, the electrode voltage in Flory merely scans over internal nucleotide energy levels with the intent of matching those internal nucleotide energy levels, and does not have a fixed component which corresponds to an energy difference between any two internal energy levels of a molecule

of interest. The electrode voltage in Flory is thus not further modulated with a modulation waveform.

In the same manner that Lee uses a sine wave across the electrodes, Flory uses a similar varying signal and thus does not add to the teaching of Lee and does not make obvious the presently claimed inventions. For this reason, the combination of Lee and Flory does not suggest the use of a fixed bias voltage or the use of additional modulation of that fixed bias voltage.

Nothing in Lee or Flory further teaches the specific modulation waveforms set forth in claim 8.

Nothing in Lee or Flory further teaches the coherent demodulation of the tunneling current with the demodulation waveform as set forth in claim 9.

Nothing and Lee or Flory further teaches the invention set forth in claim 17, wherein an additional pair of nano-electrodes are used with an additional bias voltage corresponding to the energy difference between any two internal energy levels of the at least one additional molecule of interest.

### Conclusion

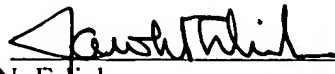
Applicant believes that the claims are in condition for allowance. No additional fees are expected to be required. However, the Commissioner for Patents is authorized to charge additional fees or credit overpayment to Deposit Account No. 50-1078.

The following information is presented in the event that a call may be deemed desirable by the Examiner:

JACOB N. ERLICH (617) 854-4000.

Respectfully submitted,  
MIAO ZHU, Applicant

Dated: December 8, 2006

By:   
Jacob N. Erlich  
Reg. No. 24,338  
Attorney for Applicant